

REMARKS

Claims 1-21 and 26-46 are pending, with claims 22-25 and 47-50 withdrawn based on the Applicant's response to restriction requirement. Claims 51 and 52 have been added. Claims 1 and 26 are independent. Claims 1, 9, 10, 11, 14, 16, 19, 20, 21, 26, 34, 35, 39, 41, 44, 45, and 46 have been amended. No new matter has been added. Reconsideration and allowance of the above-referenced application are respectfully requested.

Rejections Under 35 U.S.C. § 103

Claims 1-21 and 26-46 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Held at al. ("Held", United States Publication Number 20020126893) in view of Luo (United States Publication Number 20040037460).

The Examiner relies on Held as purportedly disclosing and/or teaching the elements of each of the claims 1-21 and 26-46 but for the use of a computer to implement the claimed methods.

Held generally discloses a method for automatically correcting color defective areas in an image. Held, at Abstract. The color-defective area correction can include red-eye correction. Id. at paragraph [0002]. As described by Held in the 'Summary of the Invention', the method includes identifying basic areas in an image that need to be corrected using known image processing techniques. Id. at paragraphs [0010] to [0014]. Where eyes are detected, the borderlines and/or center of the colour-defective areas are identified, and a determination is then made whether such areas are deemed to be defective. This includes, for instance, identifying a

red eye defect. Id. at paragraphs [0015], [0018], and [0020]. If a defect is identified, a correction mask is created to correct the appearance of the image. Id.

Held describes that the area to which a red eye defect extends from the center of an eye is identified based on fuzzy membership functions for H, S, and V. Once pixels are identified as belonging to the red eye defect, neighboring pixels are identified, and then analyzed to determine whether those are included within the defect. The correction mask grows to include each of the defective pixels. This iterative process continues until no more defective pixels are identified. Id. at [0021] to [0025]. After a smoothing operation is applied to the correction mask (see, e.g., paragraph [0026]), the mask is applied to the uncorrected image to remove the red-eye defect.

The correction mask is represented by a grey-scale mask that allows for comparatively efficient gradual corrections towards the borderlines of the color-defective area. Id. at [0027]. The mask is a measure for the probability whether a certain pixel belongs to a red-defect region or not. Id. at [0102]. The equation to correct an image is shown at paragraphs [0028] and [0103], in which the red colour channel of a pixel is reduced by a correction factor 'm', as provided by the color mask, towards the green colour channel and the blue colour channel. Id. at [0029] and [0104].

The Amended Claims Are Allowable

Amended independent claims 1 and 26 recite, in part:

computing a color of one or more pixels in the target region from on one or more probability functions and one or more spatial profile functions, each probability function defining a probability value at each of the one or more pixels in the target region, the probability value representing the probability that the pixel corresponds to one or

more features of the object, each spatial profile function being defined based on one or more spatial properties of the object or one or more of its features. (Emphasis added.)

The Examiner states that the use of the grey-scale mask in Held incorporates the claimed probability functions, citing paragraphs [0102] of Held and referring to the probability function as the 'mask'. See Office Action at Pages 2-3. The Examiner also states that the one or more spatial profile functions are provided by the two dimensional accumulator space that is used in the course detection stage. See Office Action at Page 3.

The Examiner's interpretation of Held does not read on the amended claims. It is clear that the process the Examiner cites for spatial profile functions relate solely to the identification of a target region of pixels in an image as opposed to being used to *compute* the color of the pixels. To further distinguish the present invention from Held, the Applicant has amended the independent claims to stress that the pixels are not only based on probability and spatial functions, but are *computed* from such functions.

The specification of the present disclosure describes the probability functions:

[E]ach probability function has a value at a given pixel that represents the probability that the pixel corresponds to a particular feature or set of features of the object... The use of probability values enables the color adjustment to be performed on pixels that correspond to particular features while leaving pixels that correspond to other features (or to no particular feature) unadjusted or adjusted by a lesser amount.

(See Specification at page 5, lines 13-14 and 18-21). The specification also describes the spatial functions:

The adjustment amount can also be determined in part based on one or more spatial profile functions (step 230). The spatial profile is a function

that has a value at a given pixel, the value being a function of the pixel's location relative to the spatial profile's area of influence... A spatial profile implementing the above-illustrated function can be used to modulate the adjustment amount such that pixels located farther away from the center of the target region are adjusted by a lesser amount than pixels located closer to the center of the target region.

(See Specification at page 7, lines 3-6 and 27-30). Both the probability and spatial functions of the present invention are used to *compute* a new pixel color. The two functions are distinct: whether a pixel is included within the feature (as provided by a probability function) is clearly distinguishable from whether a pixel is a certain distance from a target region (as provided by a spatial function.)

The Examiner is correct that the grey-scale mask described by Held is a measure for the probability whether a certain pixel belongs to a red-defect region or not. Id. at [0102]. However, Held *fails to factor any additional functions* into the *computation* of a pixel color, including any spatial functions.

It should be noted that the majority of Held's disclosure is directed to methods of identifying a face and eyes within an image, as opposed to the use of an algorithm to compute or adjust colors in an image. See, e.g., paragraphs [0053] to [0091]. For instance, FIG. 10 is described as showing "a flow diagram for the automatic detection of image patterns and particularly for human eyes, the sun, a flashlight reflection or the like. The detection is carried out in two stages: a coarse stage followed by a refinement stage." (Emphasis added.) Held states that "for both the coarse and the refinement detection stage, the gradient decomposed Hough transform is relied on for the detection of the eyes." [0070].

Because the mask of Held does not implement both probability and spatial functions, the Examiner relies on processes in the identification of images described in the preceding paragraph to satisfy the spatial function of the claims. Those processes serve no role in the color computations defined by Held at paragraphs [0028] and [0103]. Nevertheless, to further distinguish the present invention from Held, in which spatial calculations are used to identify a *region* that is then used to generate a mask, the independent claims now recite computing a color of one or more pixels in the target region from on one or more probability functions and one or more spatial profile functions.

Thus, claims 1 and 26 should be in condition for allowance for at least this reason. Additionally, each of the pending dependent claims should be in condition for allowance as depending on an allowed base claim.

Conclusion

The foregoing comments made with respect to the positions taken by the Examiner are not to be construed as acquiescence with other positions of the Examiner that have not been explicitly contested. Accordingly, the above arguments for patentability of a claim should not be construed as implying that there are not other valid reasons for patentability of that claim or other claims.

Please apply any excess claims fees, and any other necessary charges or credits, to deposit account 06-1050.

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